METHOD AND APPARATUS FOR CALCULATING ALTITUDE BASED ON BAROMETRIC AND GPS MEASUREMENTS

A navigation device and a method of calibrating the same are provided. The device includes a barometric pressure sensor and a GPS receiver. A processor calculates barometric and GPS derived altitudes and, based on a difference therebetween, corrects barometer altitude readings that would otherwise include drift errors. The processor uses a filter, such as a state feedback loop, to determine correction factors. The state feedback loop is adjustable to operate with different time constants. An error drift model is empirically determined and used to set the time constant. The time constant may be adjusted during operation based on a relation between the barometer correction quantity and an uncertainty in the vertical component of the GPS derived altitude. The method includes updating and recalibrating an atmospheric pressure model used to derive altitudes from the output of the barometric pressure sensor.